

In the Claims

1 1. (currently amended) A monolithic microwave integrated circuit, comprising:
2 an amplifier circuit having a group delay variation verses frequency characteristic;
3 and
4 a group delay equalizer circuit integrated with said amplifier circuit to
5 compensate for said group delay variation verses frequency characteristic of said amplifier
6 circuit to frequencies above 50 GHz.

1 2. (original) The circuit of Claim 1, wherein said amplifier circuit is capable of receiving
2 an input signal having a frequency range, amplifying said input signal and producing an output
3 signal corresponding to said amplified input signal, said group delay equalizer circuit being
4 further capable of maintaining near constant group delay of frequencies within said frequency
5 range of said input signal to prevent distortion of said output signal.

1 3. (original) The circuit of Claim 1, wherein said group delay equalizer circuit
2 comprises between 3 and 20 percent of the area of said monolithic microwave integrated circuit.

1 4. (canceled)

1 5. (original) The circuit of Claim 1, wherein said amplifier circuit is a distributed
2 amplifier circuit.

1 6. (original) The circuit of Claim 5, wherein said distributed amplifier circuit comprises
2 one or more stages, each of said one or more stages including a common source field-effect
3 transistor, a bipolar transistor or a cascode field-effect transistor structure.

1 7. (original) The circuit of Claim 1, wherein said amplifier circuit is a feedback
2 amplifier circuit.

1 8. (original) The circuit of Claim 1, wherein said group delay equalizer circuit
2 comprises one or more sections, each of said sections having a different group delay response.

1 9. (original) The circuit of Claim 8, wherein at least one of said one or more sections is
2 placed at the input of said amplifier circuit.

1 10. (original) The circuit of Claim 8, wherein at least one of said one or more sections is
2 placed at the output of said amplifier circuit.

1 11. (original) The circuit of Claim 8, wherein at least one of said one or more sections is
2 placed between one or more stages of said amplifier circuit.

1 12. (original) The circuit of Claim 8, wherein said one or more sections are cascaded
2 together to form a composite group delay response capable of compensating for said group delay
3 variation verses frequency characteristic of said amplifier circuit.

1 13. (original) The circuit of Claim 8, wherein at least one of said one or more sections
2 has least one microstrip line inductive over a specific frequency range and at least one capacitor
3 to create a specific phase response over at least a portion of the frequency range of said amplifier
4 circuit.

1 14. (original) The circuit of Claim 13, wherein at least one of said one or more sections
2 is a filter selected from the group consisting of: an LC filter, a bridged LC filter, an RC filter and
3 an RLC filter.

1 15. (original) The circuit of Claim 13, wherein at least one of said one or more sections
2 is a filter with a microstrip transformer.

1 16. (original) The circuit of Claim 1, further comprising:
2 a substrate, said amplifier circuit and said group delay equalizer circuit being
3 fabricated in said substrate.

1 17. (original) The circuit of Claim 16, wherein said substrate is made from a material
2 selected from the group consisting of: a III-V material, a II-VI material and a heterostructure
3 material.

1 18. (original) The circuit of Claim 1, wherein said group delay equalizer circuit is
2 further capable of allowing a near constant gain response to be achieved over the frequency
3 range of said amplifier circuit.

1 19. (currently amended) A method for providing a near constant group delay over a
2 frequency range of a amplifier circuit, comprising the steps of:

3 providing said amplifier circuit within a monolithic microwave integrated circuit,
4 said amplifier circuit having a group delay response variation verses frequency characteristic;
5 and

6 integrating a group delay equalizer circuit with said amplifier circuit on said
7 monolithic microwave integrated circuit to compensate for said group delay variation verses
8 frequency characteristic of said amplifier circuit to frequencies above 50 GHz.

1 20. (original) The method of Claim 19, further comprising the steps of:

2 receiving an input signal having a frequency range at said amplifier circuit;

3 amplifying said input signal to produce an output signal corresponding to said
4 amplified input signal; and

5 maintaining, by said group delay equalizer circuit, near constant group delay of
6 frequencies within said frequency range of said input signal to prevent distortion of said output
7 signal.

1 21. (original) The method of Claim 19, wherein said group delay equalizer circuit
2 comprises between 3 and 20 percent of the area of said monolithic microwave integrated circuit.

1 22. (canceled)

1 23. (original) The method of Claim 19, wherein said step of integrating further
2 comprises the step of:

3 integrating one or more sections of said group delay equalizer circuit with said
4 amplifier circuit on said monolithic microwave integrated circuit, each of said sections having a
5 different group delay response.

1 24. (original) The method of Claim 23, wherein said step of integrating said one or more
2 sections further comprises the step of:

3 placing at least one of said one or more sections at the input of said amplifier
4 circuit.

1 25. (original) The method of Claim 23, wherein said step of integrating said one or more
2 sections further comprises the step of:

3 placing at least one of said one or more sections at the output of said amplifier
4 circuit.

1 26. (original) The method of Claim 23, wherein said step of integrating said one or more
2 sections further comprises the step of:

3 placing at least one of said one or more sections between one or more stages of
4 said amplifier circuit.

1 27. (original) The method of Claim 23, wherein said step of integrating said one or more
2 sections further comprises the step of:

3 cascading said one or more sections together to form a composite group delay
4 response capable of compensating for said group delay variation verses frequency characteristic
5 of said amplifier circuit.

1 28. (original) The method of Claim 19, wherein said step of integrating further
2 comprises the step of:

3 integrating said group delay equalizer circuit with said amplifier circuit on said
4 monolithic microwave integrated circuit to allow a near constant gain response to be achieved
5 over the frequency range of said amplifier circuit.

1 29. (new) A monolithic microwave integrated circuit, comprising:

2 an amplifier circuit having a group delay variation verses frequency characteristic;
3 and

4 a group delay equalizer circuit integrated with said amplifier circuit to
5 compensate for said group delay variation verses frequency characteristic of said amplifier
6 circuit, said group delay equalizer circuit comprising a plurality sections, each section having a
7 different group delay response, said plurality of sections being cascaded to form an overall
8 composite group delay response.

1 30. (new) The monolithic microwave integrated circuit of claim 29, wherein said
2 amplifier circuit has a plurality of stages.

1 31. (new) The monolithic microwave integrated circuit of claim 30, wherein said
2 plurality of sections can be separated by said plurality of stages.

1 32. (new) The monolithic microwave integrated circuit of claim 29, wherein said
2 group delay equalizer circuit is capable of compensating for said group delay variation verses
3 frequency characteristic of said amplifier circuit to frequencies above 50 GHz.